Device: MOD-1001

This document Version: 1.0

Date: July 2010

Description: RTC Temp Sensor Module

Matches kit version: A

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Introduction

The MOD-1001 is an i2c based Real Time Clock (RTC) and temperature sensor module.

Features

The MOD-1001 features M41T81S from ST, and a TMP75 from TI. The module makes both available over an I2C serial buss and includes pull-up resistors, battery backup from the RTC and 32.768kHz crystal.

Hackability

The MOD-1001 is 100% hackable.

At EA, we believe you have the most fun when you have the most control over your hardware. For the MOD-1001 we provide a datasheet, complete schematic and complete source code. After that, it's all up to you. We'd love to hear about the projects you're using it for – send us information and photos to myproject@embeddedadventures.com

Construction

Please see the "Building Kits" section under Tutorials on the EA web site – www.embeddedadventures.com

Connections

The MOD-1001 has one connection ports.

VCC	Positive supply. 3V – 5V.
SDA	I2C serial data
SCL	I2C serial clock
INT	Connected to RTC SQW output
GND	Ground (Vss) connection.

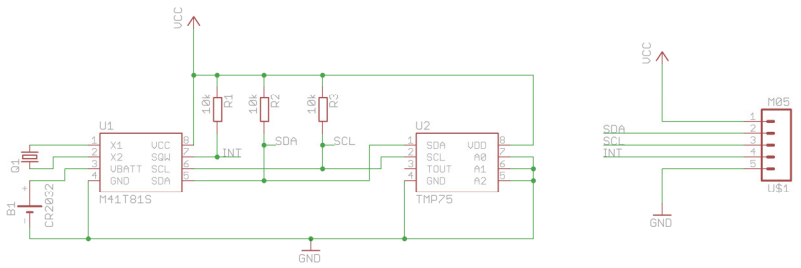
Power

The MOD-1001 can be powered from 3V – 5V.

Pull up resistors

I2C requires the use of pull-up resistors. If you are connecting to an existing I2C buss that already has pull-up resistors, or you are using internal pull-ups in your microcontroller, you do not have to install the pull-up resistors on the MOD-1001 board.

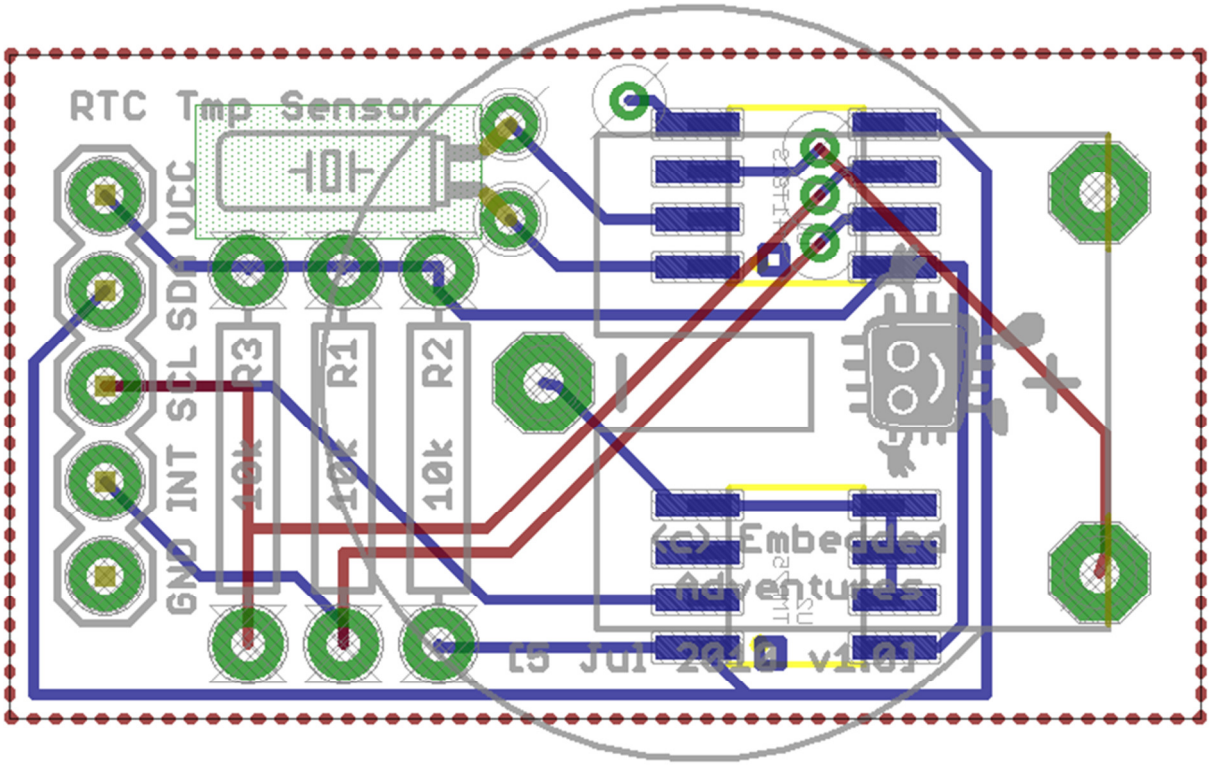
Schematic



The MOD-1001 schematic is a work of simplicity and grace.

The RTC used on the MOD-1001 board is the ST M41T81S. It's a great chip that has plenty of features worth playing with, including an alarm function. The SQW output is connected to the INT output and can be used as an interrupt source, for pulses each second or alarms. A CR2032 battery powers the M41T81S when main power is removed. This should keep the RTC powered for the lifetime of the universe or about 10 years, whichever occurs first. The RTC is clocked by a 32.768Khz crystal. The TMP75 is a good value temperature sensor, and while it's not the most accurate chip available, it does a perfectly sufficient job for displaying the local temperature.

PCB



The board is designed to allow you to construct the entire project by hand soldering. Even the surface mount parts are not difficult. Please see the "Building Kits" section under Tutorials on the EA web site – www.embeddedadventures.com – for more information. The two ICs are mounted on the underside of the board.

Versions

Version	Date	Comments
Version 1.0	30 July 2010	Initial Version for board v1.0